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ABSTRACT

This paper discusses the relationship between individual differences and educational practices by reviewing the historical models of teaching and past research on learner characteristics. The mental testing movement is reviewed in terms of the emergence of aptitude as a measurable concept. Learner motivation is also discussed along with the effectiveness of various teaching methods and educational practices that take individual differences into account. A number of recommendations relating to admissions policies and student counseling are listed as well as recommendations to provide needed diversity of teaching-learning situations. (JAC)

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LEARNER INDIVIDUAL DIFFERENCES and DIFFERENTIATED EDUCATIONAL PRACTICES

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LEARNER INDIVIDUAL DIFFERENCES & DIFFERENTIATED EDUCATIONAL PRACTICES**

"Man's greatest distinction is his almost limitless ability to learn, to absorb and use the vast stores of knowledge created over the centuries by other human beings, and thus to master the world around him as no other creature on earth can. Man is preeminently the learning animal."

.....(Edson: 1975, p.81)

Empirically and abstractly, individual differences in aptitude patterns and styles of problem solving suggest varied recommendations for maximizing student and college adaptations to each other. These affect, primarily, the capstone educational process of teaching-learning. Of course, learning is the heart of the educational process. Over the years, educational psychologists have sought to develop an understanding of the nature of learning and of those aspects of learning which are of greatest significance for the teacher.

"While there is considerable unanimity in recognizing that learning is essentially change due to experience, (underlining supplied), different points of view have arisen regarding those aspects of learning which have the greatest theoretical and practical importance for the teacher and for education." (Harris & Schwahn: 1961, p.1.)

In hisorical perspective, the Socratic method of teaching expects the instructor to respond to nuances of student-learner individual differences. He further charges the teacher to skillfully draw each student along in accordance with his unique, (i.e., individual differences) strengths and weaknesses. It would therefore appear that as long as teachers have taught and students have learned, such individual differences, both in learning capacities and learning skills, have been tacitly - if not implicily - acknowledged.

Unfortunately, for many in education this teaching model has been embraced

** In part, this document synthesizes the Malcolm Wescott (see reference 69-2) comprehensive and lucid discussion of learner individual differences and their profound impact upon instructional and allied strategies designed to maximize student learning.

without much consideration for such critical individual differences among students. Nor, for that matter, does it consider the appropriate differentiated responses which would be made by the teachers. Yet, this method has persisted, and the more sensitive and skilled teachers have productively responded to such individual differences. Regretably, however, such productive teacher responses have been but a small fraction of total teaching effort.

Over intervening years education has witnessed extensive movements which have recognized and provided in varied teaching techniques timely adaptations which have responded to such existing variations among student-learners. One of the earliest efforts in this movement was the growth of the so-called experimental psychology of learning. Ebbinhaus' studies embracing the experimental analysis and measurement of the numerous variables controlling human memory explored, specifically:

1- time-practice function.
2- interference in learning.
3- memory-time decrements.

It is especially noteworth that the so-called learning 'laws' thereby derived were not especially different from those offered many centuries earlier by Aristotle! These empirically-derived laws of learning - and memory - appeared to be superior to so-called 'common-sense' rules, for they took greater and more specific account of the particular conditions affecting the learning and memory processes. Additionally, after experimental replications under strictly-controlled conditions of experimental design, these 'laws' were reinforced to the extent that they cast new light upon the conditions under which these learning propositions were valid, and the conditions under which they appeared invalid (untrue). It should also be noted that almost without expection, even the earliest statements of general learning laws contain some statistical statements regarding the noted ranges of individual variations.

> "Any measurement of learning, by whatever standards and criteria, is significant only in terms of the general constitutional considerations under which the learning has occurred. ....Action or conduct, at any time, under any stimulating conditions, must always be figured as determined by two factors: (1) previous learning; and (2) the organic status of the moment." (Dunlap: 1972, p.9).

Sharp (1898), before the turn of the century, observed that the fundamental time and practice functions of learning definitely varied among different indivudals. He further noted that although time-practice functions were critical variations among all learners, of particular significance is the fact that their effects wre definitely subject to individual variations. Especially noteworthy is the fact that as recently as 1968 (Wimer (1968) reported the empirically-disclosed fact thta in two different purebred strains of rats, the massing and spacing of trials in a most simple learning situation resulted in diametrically opposed effects between the two rat strains!

Historical review further reveals that with increased sophistication of learning theories, both the numbers and the kinds of variables, either defined or hypothesized, also increased. For example - Pavlov's now classic studies of dogs were the principal basis for his postulated laws of learning. These embrace a most complex and differentiated set of interlocking principles rekating both to environmentally-oriented conditions and brain functions. These, in concert, make a substantial contribution to explaining the intricate learning processes.

Today, it is generally agreed that ..."intelligence is the ability to learn. ...A famous comedian, Will Rogers, once said: 'we're all ignorant, only on different subjects'. Most psychologists would agree, and it is just as true that everyone is intelligent, (I.E., has the ability to learn), in some areas but not in others". (underlining added) (Haines: 1979. p.62)

Thorndike (1914) also noted early in this century that the equalization of practice behavior for a selected group of apparently comparable individuals increased rather than decreased performance differences among them. Additionally,

Hull (1943) postulates and identifies not less than a dozen variables to be taken into account in order to yield accurate and relaible predictions of even most simple of learning situations.

One final note regarding the contributions to educational practices made by the experiemental learning psychologists. Evidently the learning process progresses according to some rather well-established, quite braod, general principles. These are:

1- individual differences ar noted in the maximum learning gains. This strongly suggests different learning rates among different learners.

2- the continuation of rapid-learning-gains persist longer for some individuals than for others.

3- the sharpness of the rate of deceleration and the rate of approach to an asymptote are also different.

Ironically- despite the overwhelming evidence for existing individual differences, much in existing educational practice contiues to proceed as if there were no such thing - a strange, somewhat anomalus situation!

The second major movement which has contributed considerably to educational policies and practices - the mental testing movement - had its inception about the turn of the century. Virtually all educators are familiar with Binet's development of the I.Q. concept - the simple mathematical ratio of an individual's 'mental age' and his chronological age. In this scale of measurement, however, Binet employed a variety of tasks. Unfortunately, because of this fact, the total I.Q. derived obsured any individual differences existing among the individual child's performance on these different kinds of tasks. It yielded instead, an overall performance rate only.

Vigorous study of the differing capacities and abilities comprising the composite concept of intelligence continued. Thurstone and Thurstone (1941)

articulated the concept of Primary Mental Abilities - seven in number. These were derived from the factor analytic studies of a wide variety of educational testing procedures. Each being statistically 'different', they could be individually evaluated, and when taken in combination, they also yielded a measure of so-called "general intelligence" capabilities of most people. The subsequent contributions of Guilford (1959), resulting from further analysis of these abilities, identified three discrete dimensions of intelligence:

1- Contents
2- Products
3- Operations.

Subsumed under each of these primary elements are numerous categories which combine to yield a particular kind of intellectual experience. Guilford identified not less than some 120 possible combinations of these elements of intellect!

As one examines closer into the complex of phenomena associated with the concept of intelligence, it quickly becomes apparent that both for 'learning' and 'intelligence', the closer one examines, the more complex are the findings. Just two brief examples are cited:

1- in an effort to refer to something more specific and precise than "general intelligence", the notion of 'aptitude' has been evolved; i.e., the capacity to learn with training. Stated in other terms, aptitude is regarded as being the inherant potential or capacity of the individual to learn. This concept of aptitude serves to distinguish this particular dimension of intelligence from the abilities represented by the skills and knowledge <u>already acquired</u> by the individual.

2- "the belief that all genuine education come about through experience does not mean that <u>all</u> experiences are genuinely or equally educative. Experience and education cannot be directly equated to each other. For some experiences are mis-educative. Any experience is mis-educative that has the effect of arresting

or distorting the growth of further experience." (Dewey: 1971 - fourteenth printing. p.25).

Cronbach (1967) offers a deceptively simple proposition regarding aptitudes. His view is that aptitude is simply and prgamatically a name given to that complex of capabilities which makes for success under a given condition of training or employment. Additionally - it is now rather generally accepted that perhaps the honest definition of intelligence is simply ..."that which is measured by intelligence tests." Such simplistic definitions serve to foster pragmatic notions that both intelligence and aptitudes are most intimately tied to particular tasks and training situations, since most often the results of intelligence and aptitude testing are utilized in selecting personnel or justifying educational practices.

Herein lies the realistic area of every-day life applications of the on-going study and analysis of individual differences and their impact upon the learning processes. In fact - in recent years interest has been shown in a more detailed analysis of existing relations between intellectual and cognitive skills on the one hand, and conditions of learning and teaching on the other. The utterly appalling and tragic conditions of ghetto children facing amiddle-class curriculum brings dramatically to the attention awareness of this most regrettable siutation. Hopefully - the healthy growth of cognitive-development psychology will help to eradicate, or at least minimize, this deplorable social situation.

It is to be noted, however, that oddly enough at the operating level of a typical public school system and college, there is yet little evidence that the advances in the analysis of existing relationships between individual differences among learners and pedagogical practices have had a significant, or even little impact, upon teaching practices.

A third major dimension which stresses the great importance of individual

differences is the rather sophisticated approach to remediation which has developed. Such remediation techniques provides for special training and the use of aptitude tests to identify and remediate those individuals who perform poorly under a given educational system and practice. Although this does evidence some adaptation in application, it does not yet provide for modification of the educational system rather than merely modifications in the student-learner.

Cronbach (1967) points out that unfortunately there has yet been almost no systematic research in which aptitude patterns have been varied concurrently with teaching methods. Virtually most of what is knownabout individual differences concerns itself with a single training procedure studied in a particular experiment. True - we know of different teaching methods, but so often it is presumed that a particular technique represents the best of all possible methods applicable to all students. But what do we actually know about the relationship between individual aptitude patterns and the appropriate strategies which might maximize learning? - virtually nothing!

Turning specifically to the collegiate level - as Glaser (1968) points out, there are - among others - three very untenable assumptions which have been implicit in virtually all higher education teaching. These are:

1- The aptitudes, achievements, and backgrounds of the students in a class are approximately equal.

2- All people learn in the same way to take approximately the same amount of time to learn the same things.

3- Teaching is an art that requires no tool and no underlying technology.

The first and second of these may readily be identified in the conduct of collegiate teaching which virtually provides, almost without exception, for all individuals in the class being:

1- taught by the same methods.
2- taught for the same length of time.
3- evaluated at the same time.
4- being graded on the same scale.

In a sense, an attempt is made to meet these same assumptions of student equivalency in admissions policies and prerequisites for courses. These practices continue even though every competent teacher knows that students are very different from each other; a fact which is clearly in evidence at the end of the course in the distribution of grades assigned!

In effect, lip service only is given to the recognized fact of individual differences. It is twisted about to justify the fact that both the teaching and the evaluation of students leaves them, at the conclusion of the course, more different in the extent of their mastery of subject-matter than they were at its beginning. In point of fact - why should all students attain essentially the same level of mastery in a course of study? Presumably this might occur if provision is made for individual differences, and further, if evaluations take place when the student has attained his level of maximum achievement - not necessarily after a specified number of clock hours have elapsed.

Dressel (1961) describes a situation in which a professor, without his knowledge, was given a section of students all of whom had perfect records of 'A' grades in previous mathematics courses. At the end of the term, he assigned 40% 'A' grades; 50% 'B' grades; 10% 'C' grades. It appears then that even when the assumption of equality among students is met - at least for this professor - he nonetheless persists and insists that there be differences among them - to be reflected in their course grades!

If the above #3 assumption is accepted uncritically , namely that teaching is an art which is not supported either by tools or technology, this reduces the teacher to working without external aids. Accepting this assumption literally, one can easily identify two quite false teaching-learning models:

1- the unwarrented assumption that learning and teaching are processes which are not open to analysis and improvement, or - what some have termed - 'studious-embracing-of-ignorance' !

2- accepting teaching as nothing more than educational technology in which the management of 'Skinnerian' learning, by means of emphasizing the technology of reinforcement contingencies, is all that is required for all kinds of learning for all kinds of student-learners.

In this connection, Buxton (1956) has clearly stated that ..."we know of no one method of instruction which is best for all situations, or all students, or all subject matters, or for all instructors." He further notes that it is not simply a matter of instructor skill, for even when the method is most congenial to the instructor, the teaching method interacts with the personality of the student being taught, and produces differential learning results. Thus, we would subscribe to the viewpoint that only through careful analysis of the multivariate nature of the educational process, and the subsequent use of the knowledge thus derived, can valid improvements occur in the teaching-learning processes. Such a technological rennaissance in educational practice would probably be the first major change since the Socratic method was 'watered down' to adapt it to more general use; i.e., classroom 'group' instruction. This represented something that was not possible in the elitist practice of the true Socratic method.

Turning to the motivation of the learner, Toffler notes:

> "The concept of the future is closely bound up with the motivation of the learner, and our failure to recognize this paralyses our programs and mutilates our children. How children or young adults see thier future is directly connected with their 'experiential preference' - their ability to live, cope and grow in a high change society. ...The future is a matter for the concern not simply of graduate students, but of the youngest elementary-school children as well, whether enrolled in conventional schools or experimental centers." (1974: pp. XXIV, XXX)

Today, there is general agreement that the research of differential effectiveness in teaching methods is a most complex process. Some of the major pitfalls which serve to obscure real differences when they exist, or which serve

to produce differences which are real artifacts, are noted by McKeachie (1963):

First: there is the so-called "Hawthorne effect" - a positive reaction to the innovation. Interestingly, the opposite is also possible; a negative response to innovation.

Second: there are the complex problems of seeking to equate students: in groups; instructor skills; instructor preferences.

Third: there are problems of controlling for the special conditions of the experimental method, such as are encountered in extensive testing activities.

Fourth: one notes the complexity of the statistical analysis, for it must - of necessity - be a multivariate method which requires that the data meet a variety of assumptions before being subjected to statistical analysis.

Fifth: there is always the criterion problem; e.g., what is the appropriate terminal behavior to be?

Although it is generally recognized that in the more simple learning situations many of these problems can be handled satisfactorily, for the student in the collegiate environment such problems are no longer simplistic. They evidence considerable complexity and great difficulty in quantification.

McKeachie (1963) in summarizing the research that has been done in comparing lecture with discussion or recitation methods, points out that relatively little difference between them is ever reported. When a statistically significant difference is reported, the straight-forward acquisition of knowledge, as measured by achievement tests, is favored by lecture methods. However - other kinds of cognitive gains, such as conceptual and critical skills, are favored by the recitation or discussion methods. And theoretically, the basis for the differences in the teaching-learning accomplishments resulting from these various methods has to do with what the learner does in the learning situation; i.e., what the student does in response to the various <u>effective</u> learning stimuli.

In the discussion method of instruction, active participant learning is expected as compared and contrasted with passive learning in the lecture option. Ideally, in the discussion method, individual development of ideas and critical feedback take place. The critical difference feature of these two methods is not the name given to them, but rather the actual varied behavior which occur, both in the learner and in the instructor. In the 'good' lecture, the effective communication of content occurs; not so in the 'bad' one. Also, the participant learning and development of critical thinking skills occurs in a 'good' lecture, but not in a 'poor' one.

Most frequently, when comparisons do show statistically significant differences, they are small. Carpenter (1964), however, does report one particularly impressive use of small group discussion. The so-called Penn State Pyramid Plan formed groups from departmental majors with six freshmen, six sophomores, two juniors, and one senior in each group. With the senior as the leader, each group met two hours weekly. They discussed:

1- personal and professional goals.
2- the skills and patterns most useful for academic success.
3- the significance of their courses to their goals.
4- issues in higher education.
5- the central concepts of their disciplines.

The goals and objectives of the discussions were worked out with faculty supervisors, and discussions of group dynamics were included. The results of this procedure, when compared with a group of students having no special treatments, as well as a group having a special series of lectures and films on essentially the same topics as the experiemntal discussion groups, showed that those who had been in the experiemntal pyramid groups had:

1- a more positive attitude toward their subject-matter.
2- more knowledge of it.
3- used the library more adequately.
4- shown greater resourcefullness in problem-solving.

Many of the desired goals professed for education were approached through the Pyramid Plan. More precisely described, this plan represents a structuring of some of the kinds of intellectual and purposive education, rather than a course. Very blunted stated - educators might well note the frequency with which students complain about the lack of intellectual life outside the classroom, and then take a leaf from the book of the Penn State University Plan! As a consequence of this comparison, when any differences among instructional methods are shown, the research findings on the comparison of such teaching methods are in line with what we might anticipate.

In such research with ongoing courses, the differences are not large, but lectures seem to do a better job of commiting information than do discussions. On the other hand, discussions best contribute to the development of critical thinking skills and individual conceptual development. The most impressive results of discussion groups appear when the discussions are directly oriented to the development of general learning skills rather than to the content orientation of a course.

At this point, one might, very appropriately, pose two rather fundamental questions relating to the college-level teaching-learning experiences:

First: there is the matter of identifying the kinds of individual differences which are most relevant to the collegiate level educational experiences.

Second: what kinds of teaching can be conducted to maximally respond to these identified differences?

Regarding the first, on the collegiate admissions scene among more selective colleges/universities, there is assuredly concern for the general academic ability differences measured by the College Entrance Examination Board (CEEB) tests, as well as high school rank and academic record. These 'academic-potential' and 'academic-achievement' indicative records serve to differentiate students in

these two broad cognitive dimensions. They are also useful tools to predict how well a particular student may be reasonably expected to perform in college studies.

At Vassar, Wescott (1968) reports that their predictions correlate with actual performance at about the level of +.40 . This means that about 16% of the difference in grades earned by students at Vassar can be predicted from their entrance academic records. It is of further interest to note that Wescott reports - as have numerous other studies - that the single best, or most powerful element in the prediction equation is class rank in secondary school. It is thus apparent that past academic 'track record' yields the best 'guesstimate' of how well the student may be expected to perform academically at the collegiate level.

Wescott (1968) further reports that a second major practice which makes provision for individual differences lies in the variety of programs and courses offered to accomodate differing learner interests. In Wescott's words, what Vassar offers:

"is the difference in interests and preferences, for subject matter. In response to this we offer a rich array of departments and courses, special majors and concentrations, experimental programs which design the focus to be peculiarly relevant to the student. Thus we respond magnificently to differences in interest."

Some other differences relevant to learning-teaching include the following representative examples.

Nixon's (1962) studies of personality changes. Among other findings, he reports isolating three major types of reactions among students during their college years. He describes first the Conformers. They:

1. do what they are told.
2- respect their elders.
3- believe in the truth of the traditional values.
4- tend to earn, quite steadily, good academic records.

It may well be that our educational practice is well attuned to them; or

perhaps the reverse is more appropriate - they are well attuned to our educational practice. As Nixon notes: "they do not seem to work their way through the years of truth, but rather to agree their way through. (1962: p. XVI)

The Growers are the seond Nixon group. They:

1- question and examine.
2- harass and invigorate both their peers and their elders.
3- appear to accept from the older generation their values which are viable and reject those that are not viable.

In Nixon's words: "They expect the adults to show them the way, but they expect themselves to get there. (1962: p. XV) In effect, they work their ways through the years of youth, and their academic records usually reflect their diversified efforts. They evidence both higher and lower personality moods; brilliance and blunders; but they continue doing their jobs, and academic grades represent only a part of it.

Nixon identifies the thirs and final group as the Rebels. They may, at first glance, appear to be the clear opposite of the Conformers, yet in many ways they are quite similar. They:

1- contrats with the Conformer who accept everything, for they reject, massively, and simply operate on a negativistic principle.
2- identify with the Conformers, in that neither group will accept responsibility for altering themselves or the world about them
3- find the world is 'bad' and therefore reject it. The Conformers find the world is 'good' and they accept it - yet neither group works with it.
4- tend to do less well, academically, whereas Conformers most often "succeed" academically.

Wescott (1968) in his studies of intuitive thinking and related problem-solving strategies, has explored yet another kind of individual difference. He deliniates four different strategies of problem-solving characteristics among four diversified groups of students. These are:

First: the Intuitive Thinkers. They consistently reach accurate conclusions on the basis of minimally explicit information. They tend to be independent, comfortably nonconformists, sweepingly abstract in their concerns, self-directing,

and enjoy risk-taking.

Second: the Wild Guessers. These individuals act on the basis of minimal explicit information in solving problems, but unfortunately are typically incorrect in their solutions. (The following 'explains' their approach: "Complex problems have simple, easy-to-understand, wrong answers" !) . They tend to be more hostile than independent, and are more cynical than the Intuitive Thinkers. A surprising number feel that college hinders their ability to think more than it helps!

Third: the Careful Successes. These individuals appear rather like Nixon's Conformers. They typically require great amounts of explicit information before they are willing to attempt solutions to problems, and they are about to be successful always in their solutions. Additionally - they tend to be well socialized, conforming, adaptable, and considerate.

Fourth: the Careful Failures. Individuals who require excessive explicit information, like the preceding group, but they are no more successful in problem-solving than are the Wild Guessers. (Perhaps they too are 'victims' of - "Complex problems have simple, easy-to-understand, wrong answers" !). These students tend to be remarkably passive. They feel the injustices of the world; know very little about themselves; have few distinguishing preferences; and seem to be committed, insofar as they are willing to commit to anything, to a quiet, shaky status quo.

Wescott (1968) reports a most interesting and unusual finding with respect to these very different kinds of thinkers; most often they are not distinguishable in their academic success, as measured by grades earned. This suggests several possible hypotheses regarding existing educational practices. The most optimistic one is that teaching is sufficiently adaptable so that all types of thinkers receive the most relevant kind of instruction.

A less optimistic hypothesis is that teaching is moderately relevant to

all, and everyone gets about the same amount of benefit from it. A third, and less sanuine hypothesis is that the instruction is simply 'tailored' to tradition the preferences of the teacher, and misses all students a good part of the time.

These various motivational findings evidence that:

"motivation is important for an understanding of behavior and learning because it refers to a continuous psycho-biological condition that makes energy available. ...Learning is never complete, nor is adjustment. We are continuously adjusting and learning how to direct our energies.

"Motivation arises from the basic biological drives. Motives aim and direct drives, and within motives are incentives, the sub-goals one reaches on the way to the ultimate goal. ... Incentives channel drives so that motivation is aimed and directed. Motivation provides energy for learning to occur, while motives and incentives direct and channel our drives. ...

"The sources of motivation are common to all, but are expressed individually. ...Incentives that affect the adjustment of one person will not influence another; ego-involvment is a variable in the adjustment of each person. ...That which will adequately energize one will not be adequate for another." (Townsend: 1962; p.31)

Very often it's the sequence of events that makes the difference in motimation. It's like the story told about the absentminded professor who was about to pour syrup on his pancakes when a fly landed on his neck. So he poured syrup down his back and scrated his pancakes! Moral: sequence of events in motivation is essential if "scratched pancakes" are to be avoided!

A final research study is one carried out by Chapman (1968) with Vassar students. It focused upon those students who, as freshmen, performed significantly above the level predicted for them as compared with students who, as freshmen, performed significantly below the level predicted for them. Representing performances above and below the predicted levels, they may or may not result in grades which are distinctly high or low on an absolute scale.

For both groups, the entrance credentials were essentially the same, and the predictions for both groups were almost identical. Chapman designates one group as Overachievers and the other as Underachievers. He reports marked differences between them which were not reflected in their admissions credentials.

He notes a tendency for the Underachievers, as freshmen, to display more authoritarian attitudes and more dependency than the Overachievers. This group also seemed to expect and want more prescriptions for their academic roles. These particular differences seem to suggest that the Underachievers are similar to Nixon's "Conformers" (who do somewhat better academically than average), and also appear similar to Wescott's "Cautious Failures" (who are not distinguishable academically).

Other differences reported between the Over-and-Underachievers included the following:

1- Overachievers responded to the transition challenge from secondary school to college much more rapidly and productively than did Underachievers whose responses involved a great deal of floundering.

2- Underachievers found the lack of home control distracting and were particularly likely to fall prey to an non-rational social life.

3- Underachievers had particular difficulty with written and oral expression whereas the Overachievers showed a generally high enthusiasm for the academic entrise in contrast to the Underachievers.

Regarding the above-cited diversified studies, one general conclusion appears evident. Although these inquiries were entirely independent of each other, they all point to similar, clear, consistent differences among students. Such differences have, or can reasonably be expected to have, strong influence on how these students proceed in the complex learning situation in college. And yet, despite this clear evidence, at both the admissions and instruction levels, much of exisiting practices proceed as if everyone were <u>totally ignorant</u> of such differences. There appears to be a general pattern in both admissions and teaching practices: many are governed, in large measure, either by economic considerations, hoary tradition, or even teacher preferences.

In this connection, Chapman (1968) reports a number of recommendations relating to admissions policies and student counseling. These include:

1- A concerted effort should be made to dispel the ignorance witnessed among Underachievers which relates to the magnitude and nature of secondary school-college articulation processes.

2- He also recommends the identification and counseling of students who are performing academically distinctly below their expected levels. Quite often, these students do not come to anyone's attention because the level at which they do perform remains satisfactory on an absolute scale.

3- For applicants whose aptitude and achievements credentials yield a prediction below satisfactory for admissions, but who evidence some of the characteristics of Overachievers, such as independence, critical skill, or unconventionality of ideas, should be given serious consideration for admission, with the positive expectation that they will perform above the predicted level.

4- Chapman also recommends that the Overachiever or high achiever who treads a narrow line of course selections should be encouraged to range beyond this so that the best of the college offerings are utilized.

Quite obviously - vigorous action based upon these recommendations would reflect a maturely intelligent and economical use of this information. However, a word of caution is in order, for any of these changes must be accompanied by the careful selection or modification of the students. Insofar as possible, the student selection should match the modified educational offerings or practices of the college.

It is absolutely essential to recognize the fact that none of these recoommendations exist in a vacuum of merely modifying the college. <u>All</u> must be accompanied by appropriate modifications of the students' behaviot. With imagination and determination, it is entirely possible to effect diversification of

teaching practices so that learners may select from a range of pedagogical methods to discover those most useful and productive for them. Unfortunately, at present we generally offer instruction which is the highest, (or is it, perhaps, the lowest?), common denominator. Those who succeed in this 'learning' (?) situation succeed; those who do not succeed, do not! We still persist with a most primitive system of adaptation to individual differences in learning; vis - "busting out" or elimnation of those who do not make the grade within a fixed clock-hour period!

In order to provide the needed diversity of teaching-learning situations, the following recommendations, which paraphrase Wescott (1968), are offered. They recognize the facts about individual differences in learning which have been demonstrated, over and over again, both in laboratory and classroom, as well as in seminars and independent study situations:

1- Lecture courses should not be offered solely as practical necessities. They should be offered as a method of choice by those best qualified to lecture.

2- Size limitations should be scrupulously observed in both discussion courses and seminars so that the special advantages of participant learning may be realized.

3- Groups similar to the Penn State University Pyramid Groups should be made available to students as valuable ways of pursuing some of the fundamental goals of higher education.

4- Whenever courses are offered in multiple sections, by different instructors, they should be offered in alternate forms; lecture, discussion, seminar - and clearly identified as such so that students may choose insofar as their rostering permits.

5- For all courses offered with classroom meetings, parallel reading courses (independent study), without classroom meetings, should be offered as often as

possible, for learning diversification purposes.

6- Whenever possible, self-scheduling of examinations should apply, permitting a student-learner to select a time for examination when maximally prepared for it.

7- The instructor should spell out in detail, and in advance, the specific goals and purposes of the course. This information should be made available to the learner, and evaluation of his performance should be consonant with the goals of the course.

8- At the time of registration, in order for intelligent student choices to be made, specific information relating to course goals, method of instruction, and examination, should be available.

9- Wherever possible, all technological aids in teaching-learning should be incorporated to maximize the educational practices.

One final caveat:

> "Patterns ...are beginning to emerge that unify previously unrelated studies of instinct and learning. ...
>
> Even the malleable learning we as humans pride ourselves on ...may have have ineradicable roots in genetic programming. ...For example, you cannot keep a normal, healthy child from learning to talk. Even a child born deaf goes through the same babbling practice phase the hearing child does....
>
> This view of human insight and creativity may be unromantic, minimizing as it does the revered role of self-awareness in our everyday lives. ... The times we are most susceptible to particular sorts of input, for instance, may be more constrained than we would like to think. The discovery of the sorts of cues or releases that might turn on a drive to learn a specific thing could open up new ways of teaching, and better methods for helping those who are culturally deprived." (Gould: 1981; pp.44, 50)

In short - individual differences in learning are but a reflection of the individual differences in the psychological makeup of each person; i.e., their unique differences which set them apart from other individuals. The above recommendations respond directly to the fact that individual differences in learning should be reflected in appropriate differences in educational practices. When

such learner differences are recognized, and incorporated into the teaching-learning process by offering diversification in the learning options available to students, maximal educational effectiveness can be achieved. In the words of Dr. Michael A. Duzy, former president of Harcum Junior College, Bryn Mawr, Pennsylvania: ..."the students learn; the teachers teach; the school's managers (administrators) manage the enterprise." (1970; p.1)

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Nota bene:

This article is dedicated to
Adam, Brandi, Carolyn & Pam;
my grandchildren, and favorite
teachers!

1982

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